WHAT IS CLAIMED IS:

1. An optical information recording medium storing information which can be reproduced by irradiation of a light beam, comprising:

a temperature responsive layer whose reflectance and/or transmittance changes with a change in temperature caused by the irradiation of a light beam.

2. The optical information recording medium as set forth in claim 1, wherein:

the reflectance and/or the transmittance of the temperature responsive layer changes by an interference effect between a reflection light of the light beam reflected on one face of the temperature responsive layer and a reflection light of the light beam reflected on the other face of the temperature responsive layer.

3. The optical information recording medium as set forth in claim 1, wherein:

the temperature responsive layer is arranged so that a low transmittance wavelength domain generated by absorption of a shorter wavelength side at an ordinary temperature includes a wavelength of a readout light beam, and the low transmittance wavelength domain is shifted

toward a longer wavelength side by a certain degree of rise in temperature of the temperature responsive layer, so that a spectral transmittance and/or a spectral reflectance with respect to the wavelength of a readout light beam changes.

4. The optical information recording medium as set forth in claim 1, wherein:

the temperature responsive layer contains a metal oxide whose reflectance and/or transmittance changes with a change in temperature.

5. The optical information recording medium as set forth in claim 4, wherein:

the temperature responsive layer contains a zinc oxide.

6. The optical information recording medium as set forth in claim 1, wherein:

the reflectance and/or the transmittance of the temperature responsive layer changes by not less than ±2% in a certain wavelength domain within a temperature range for reproducing the information.

7. The optical information recording medium as set forth in claim 1, wherein:

the temperature responsive layer enables reproduction of a minute recording mark less than a diffraction limit of a readout light beam, by a change in reflectance and/or transmittance for a light beam with a change in temperature.

8. The optical information recording medium as set forth in claim 1, wherein:

the transmittance of the temperature responsive layer decreases with a rise in temperature.

9. The optical information recording medium as set forth in claim 1, further comprising:

a substrate having a surface formed in a concave-convex state by providing pits and grooves corresponding to recorded information; and

a reflection layer formed on the substrate,

wherein:

the temperature responsive layer is formed on the reflection layer.

10. An optical information recording medium for storing information and for allowing reproduction of the information by irradiation of a light beam, comprising:

a temperature responsive layer whose reflectance

and/or transmittance changes with a change in temperature caused by the irradiation of a light beam.

11. The optical information recording medium as set forth in claim10, wherein:

the reflectance and/or the transmittance of the temperature responsive layer changes by an interference effect between a reflection light of the light beam reflected on one face of the temperature responsive layer and a reflection light of the light beam reflected on the other face of the temperature responsive layer.

12. The optical information recording medium as set forth in claim10, wherein:

the temperature responsive layer is arranged so that a low transmittance wavelength domain generated by absorption of a shorter wavelength side at an ordinary temperature includes a wavelength of a readout light beam, and the low transmittance wavelength domain is shifted toward a longer wavelength side by a certain degree of rise in temperature of the temperature responsive layer, so that a spectral transmittance and/or a spectral reflectance with respect to the wavelength of a readout light beam changes.

13. The optical information recording medium as

set forth in claim 10, wherein:

the temperature responsive layer contains a metal oxide whose reflectance and/or transmittance changes with a change in temperature.

14. The optical information recording medium as set forth in claim 13, wherein:

the temperature responsive layer contains a zinc oxide.

15. The optical information recording medium as set forth in claim 1, wherein:

the reflectance and/or the transmittance of the temperature responsive layer changes by not less than ±2% in a certain wavelength domain within a temperature range for reproducing the information.

16. The optical information recording medium as set forth in claim 1, wherein:

the temperature responsive layer enables reproduction of a minute recording mark less than a diffraction limit of a readout light beam, by a change in reflectance and/or transmittance for a light beam with a change in temperature.

17. The optical information recording medium as set forth in claim 10, wherein:

the transmittance of the temperature responsive layer decreases with a rise in temperature.

18. The optical information recording medium as set forth in claim10, further comprising:

a reflection layer; and

the recording layer formed on the reflection layer,

wherein:

the temperature responsive layer is formed on the recording layer.

19. A reproduction method by irradiation of a light beam for reproducing information recorded on an optical information recording medium having a temperature responsive layer whose reflectance and/or transmittance changes with a change in temperature caused by the irradiation of a light beam, the temperature responsive layer enabling reproduction of a minute recording mark less than a diffraction limit of a readout light beam.

20. A reproduction method for reproducing information recorded on an optical information recording medium having a temperature responsive layer whose

reflectance and/or transmittance changes with a change in temperature caused by the irradiation of a light beam, comprising the steps of:

irradiating the optical information recording medium with a light beam so that a high temperature section and a low temperature section are generated in a light beam spot of the temperature responsive layer, and the transmittance of the temperature responsive layer decreases in the high temperature section; and

reproducing the information with a light transmitted through the low temperature section of the temperature responsive layer.

21. A reproduction method for reproducing information recorded on an optical information recording medium having a temperature responsive layer whose reflectance and/or transmittance changes with a change in temperature caused by the irradiation of a light beam, comprising the steps of:

irradiating the optical information recording medium with a light beam so that a high temperature section and a low temperature section are generated in a light beam spot of the temperature responsive layer, and the transmittance of the temperature responsive layer decreases in the low temperature section; and

reproducing the information with a light transmitted through the high temperature section of the temperature responsive layer.

22. A recording method by irradiation of a light beam for recording information onto an optical information recording medium having a temperature responsive layer whose reflectance and/or transmittance changes with a change in temperature caused by the irradiation of a light beam, the temperature responsive layer enabling recording of a minute recording mark less than a diffraction limit of a recording light beam, by a change in reflectance and/or transmittance for a light beam with a change in temperature.

23. A recording method for recording information onto an optical information recording medium having a temperature responsive layer whose reflectance and/or transmittance changes with a change in temperature caused by the irradiation of a light beam, comprising the steps of:

irradiating the optical information recording medium with a light beam so that a high temperature section and a low temperature section are generated in a light beam spot of the temperature responsive layer, and the transmittance of the temperature responsive layer decreases in the high

temperature section; and

heating a recording layer with a light transmitted through the low temperature section of the temperature responsive layer.

24. A recording method for recording information onto an optical information recording medium having a temperature responsive layer whose reflectance and/or transmittance changes with a change in temperature caused by the irradiation of a light beam, comprising the steps of:

irradiating the optical information recording medium with a light beam so that a high temperature section and a low temperature section are generated in a light beam spot of the temperature responsive layer, and the transmittance of the temperature responsive layer decreases in the low temperature section; and

heating a recording layer with a light transmitted through the high temperature section of the temperature responsive layer.

25. An optical information reproduction device, comprising:

an optical information recording medium;

a light irradiator for irradiating the optical information recording medium with a light beam; and

a light detector for detecting a reflection light,

wherein:

the optical information recording medium includes a temperature responsive layer whose reflectance and/or transmittance changes with a change in temperature caused by the irradiation of a light beam, and the light irradiator and the light detector are arranged to enable reproduction of a minute recording mark less than a diffraction limit of a readout light beam.

26. An optical information recording device, comprising:

an optical information recording medium; and

a light irradiator for irradiating the optical information recording medium with a light beam,

wherein:

the optical information recording medium includes a temperature responsive layer whose reflectance and/or transmittance changes with a change in temperature caused by the irradiation of a light beam, and the light irradiator is arranged to enable recording of a minute recording mark less than a diffraction limit of a readout light beam.